

CLAIMS

What is claimed is:

- 5 1. A method for use of local loop telephone lines that extend between a telephone company switch and multiple different customer premises, including a first local loop telephone line extending between the telephone company switch and a first customer premises, and a second local loop telephone line extending between the telephone company switch and a second customer premises, wherein the telephone company switch provides connectivity with a transport
- 10 network, the method comprising the following steps:
- interfacing each of the local loop telephone lines with a respective wireless transceiver between the telephone company switch and the customer premises to which the local loop telephone line extends; and
- operating each wireless transceiver to communicate with a wireless access network that
- 15 provides connectivity with the transport network, so as to communicatively connect each local loop telephone line with the transport network without use of the telephone company switch,
- whereby (i) communications then flow between the first customer premises and the transport network via a first communication path comprising the first local loop telephone line, a first wireless transceiver, and the wireless access network, and (ii) communications then flow
- 20 between the second customer premises and the transport network via a second communication path comprising the second local loop telephone line, a second wireless transceiver, and the wireless access network.

2. The method of claim 1, wherein the wireless access network comprises a cellular telephone system having a base transceiver station, a base station controller, and a mobile switching center connected with the transport network.

5 3. The method of claim 2, further comprising:
arranging each of the wireless transceivers to operate under a respective directory number in the cellular telephone system.

10 4. The method of claim 3, wherein arranging each of the wireless transceivers to operate under a respective directory number in the cellular telephone system comprises:
arranging a given wireless transceiver to operate under a directory number that is assigned to the local loop with which the given wireless transceiver is being interfaced.

15 5. The method of claim 1, wherein each wireless transceiver operates under a respective directory number,
whereby a call placed via the transport network to a given directory number is routed to the wireless access network, via the wireless network to a wireless transceiver operating under the given directory number, and in turn via a given local loop telephone line to a given customer premises.

20 6. The method of claim 5, further comprising:
assigning equipment at the given customer premises to operate under the given directory number.

7. The method of claim 1, wherein interfacing each local loop telephone line with a respective wireless transceiver comprises:

statically correlating the local loop telephone line with the respective wireless transceiver.

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8. The method of claim 1, wherein interfacing each local loop telephone line with a respective wireless transceiver comprises:

dynamically correlating the local loop telephone line with the respective wireless transceiver.

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9. The method of claim 1, wherein the telephone company switch resides at a telephone company central office, the method further comprising:

carrying out the interfacing function at the telephone company central office.

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10. The method of claim 1, wherein each local loop telephone line is operatively linked with a respective subscriber line interface circuit, the method further comprising:

carrying out the interfacing function, with respect to a given local loop telephone line, at a point between (i) the subscriber line interface circuit with which the given local loop telephone line is operatively linked and (ii) the customer premises to which the given local loop telephone line extends.

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11. The method of claim 1, wherein each local loop telephone line is operatively linked with a respective subscriber line interface circuit between the telephone company switch

and the customer premises to which the local loop telephone line extends, the method further comprising:

carrying out the interfacing function, with respect to a given local loop telephone line, at a point between (i) the subscriber line interface circuit with which the given local loop telephone line is operatively linked and (ii) the telephone company central office.

12. The method of claim 1, further comprising:

carrying out the interfacing function, with respect to a given local loop telephone line, at a concentrator that sits between the telephone company switch and the customer premises to which the given local loop telephone line extends.

13. The method of claim 1, further comprising:

carrying out the interfacing function, with respect to a given local loop telephone line, at a cable head-end between the telephone company switch and the customer premises to which the given local loop telephone line extends.

14. The method of claim 1, further comprising:

concurrently (i) operating the first wireless transceiver to pass communications between the first customer premises and the transport network and (ii) operating the second wireless transceiver to pass communications between the second customer premises and the transport network.

15. The method of claim 1, wherein interfacing each local loop telephone line with a respective wireless transceiver comprises:

translating between (i) local loop signaling on the local loop telephone line and (ii) wireless-access-network signaling communicated between the respective wireless transceiver and the wireless access network.

16. The method of claim 15, wherein translating between local loop signaling and wireless-access-network signaling comprises translating between signaling to facilitate at least one enhanced telephone service selected from the group consisting of:

caller-ID;
call-waiting;
conference calling; and
message-waiting indication

17. The method of claim 15, wherein interfacing each local loop telephone line with a respective wireless transceiver further comprises:

emulating a local loop on the local loop telephone line.

18. The method of claim 15, wherein emulating a local loop comprises performing functions selected from the group consisting of:

detecting an off-hook event;
delivering a dial tone;
detecting dialed digits;

delivering a ring signal;
delivering a busy signal; and
detecting an on-hook event.

5 19. The method of claim 15, wherein interfacing each local loop telephone line with a
respective wireless transceiver further comprises:

receiving outbound voice communications from the local loop telephone line and passing
the outbound voice communications to the respective wireless transceiver for transmission via
the wireless access network to the transport network; and

10 receiving inbound voice communications that the respective wireless transceiver receives
from the transport network via the wireless access network, and passing the inbound voice
communications to the local loop telephone line for transmission to the customer premises to
which the local loop telephone line extends.

15 20. The method of claim 1, wherein the transport network comprises the public
switched telephone network.

21. The method of claim 1, further comprising carrying out the steps at a telephone
company central office.

20 22. In a system comprising a first telecommunications company that operates
facilities for communicatively connecting local loop telephone lines with a transport network,
and a second telecommunications company that operates a radio access network (RAN) for

communicatively connecting wireless communication devices with the transport network, a method comprising:

providing multiple wireless communication devices at the first company's facilities, each wireless communication device being configured to register on the RAN and to place and receive
5 calls on the transport network via the RAN; and

interfacing the multiple wireless communication devices with the local loop telephone lines at the first company's facilities, so as to concurrently extend multiple calls between the local loop telephone lines and the transport network via a communication path comprising the wireless communication devices and the RAN.

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23. The method of claim 22, wherein the transport network comprises the public switched telephone network.

24. The method of claim 22, wherein each of the wireless devices operates under a
15 respective unique directory number in the RAN.

25. The method of claim 22, further comprising:
the second company paying the first company for access to the local loop telephone lines.

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26. The method of claim 22, wherein interfacing the multiple wireless communication devices with the local loop telephone lines at the first company's facilities comprises:

translating between (i) local loop signaling on the local loop telephone lines and (ii) RAN signaling communicated between the wireless communication devices and the RAN.

27. The method of claim 26, wherein interfacing the multiple wireless communication devices with the local loop telephone lines at the first company's facilities further comprises:

receiving outbound voice communications from the local loop telephone lines and
5 passing the outbound voice communications to the wireless communication devices for transmission via the RAN to the transport network; and

receiving inbound voice communications that the wireless communication devices receive from the transport network via the RAN, and passing the inbound voice communications to the local loop telephone lines.

10 28. A system comprising:

a telephone line interface comprising multiple ports configured to connect with telephone lines extending to multiple different customer premises locations, including a first port configured to connect with a first telephone line extending to a first customer premises location
15 and a second port configured to connect with a second telephone line extending to a second customer premises location;

a radio access network (RAN) interface communicatively linked with the telephone line interface, the RAN interface comprising multiple RAN clients each configured to register on a RAN under a respective client identifier and to then operate under the respective client identifier
20 when placing and receiving voice calls on a transport network via the RAN;

call-interface logic for bridging multiple voice calls concurrently between the RAN interface and the telephone line interface, so as to extend at least (i) a first voice call between the first customer premises location and the transport network via the first RAN client and (ii) a

second voice call between the second customer premises location and the transport network via the second RAN client.

29. The system of claim 28, further comprising local loop emulation logic for
5 emulating a local loop respectively on each telephone line.

30. The system of claim 28, integrated as a single apparatus.

31. A telecommunications system comprising:

10 a telephone line interface configured to connect with a plurality of telephone lines that extend to respective customer premises locations, wherein the telephone line interface emulates a local loop respectively on each telephone line;

a radio access network (RAN) interface communicatively linked with the telephone line interface, the RAN interface comprising multiple RAN clients each configured to register on a
15 RAN under a respective client identifier and to then operate under the respective client identifier to place and receive voice calls on a transport network via the RAN; and

logic operative to bridge the RAN clients with the telephone lines, so that voice calls from the customer premises locations extend via the RAN to the transport network and voice calls from the transport network extend via the telephone lines to the customer premises
20 locations.

32. The telecommunications system of claim 31, wherein at least a portion of the logic resides in a component selected from the group consisting of (i) a controller

communicatively linked with both the telephone line interface and the RAN interface, (ii) the telephone line interface and (iii) the RAN interface.

33. The telecommunications system of claim 31, wherein the system is located at a
5 telephone company central office.

34. The telecommunications system of claim 31, integrated as a single apparatus.